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FALL 2026 EDITION



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COVER PHOTO:
Lewis Baarda and Thierry Fonville install soil moisture sensors as part of Farming Smarter's reduced irrigation trial, which is evaluating strategies to optimize water use while maintaining crop productivity.

Credit: Farming Smarter

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FARMING SMARTER

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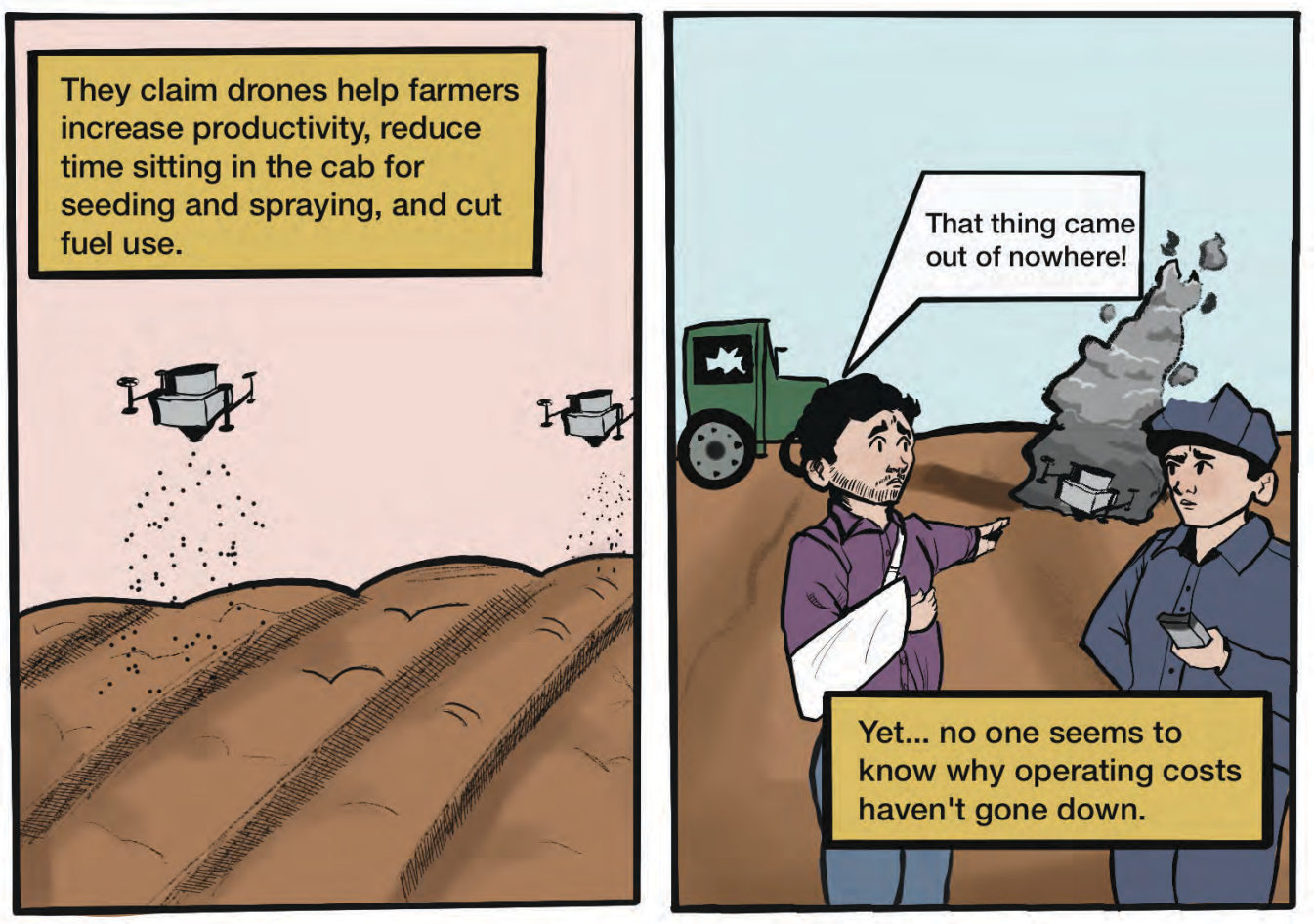
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PRESIDENT'S MESSAGE



RYAN MERCER
FARMING SMARTER BOARD PRESIDENT

A Place To Keep Farming Smarter

For more than three decades, Farming Smarter and the organizations that came before it have worked alongside farmers to test ideas, challenge assumptions and find practical ways to improve agriculture.

For almost all of Farming Smarter's existence, that place has been research land at the Lethbridge College/ Lethbridge Polytechnic site. Generations of farmers, researchers, students and industry partners have established plots, tested crops and evaluated equipment in real-world conditions.

Unfortunately, our landlords have other plans for the facility we occupy. So, we are exploring opportunities to lease or purchase suitable land, as well as landowners who may be willing to donate land to help secure the future of applied agricultural research in southern Alberta.

This is about preserving a place where farmers can help shape research that affects their operations.

Farming Smarter was built from a grassroots commitment to farmer-led research. Formed in 2012 through the amalgamation of the Southern Applied Research Association and Southern Alberta Conservation Association, we carry more than 35 years of applied research experience.

Our work has evolved with farming, from zero tillage and crop rotations to emerging crops, precision agriculture, resource stewardship and new production technologies. The common thread is practical application. That work gives farmers information they can use on farms.

Farmers need research they can use. They need unbiased information that reflects Prairie growing conditions and opportunities to see and evaluate new ideas before making decisions on their own farms.

Although rooted in southern Alberta, our work reaches well beyond the region. We connect producers, agronomists, researchers, students, industry and innovators across Western Canada, helping turn research into decisions that can improve productivity, profitability and resilience.

None of that happens without land.

Now we need our agricultural community to help us take the next step.

We are seeking support to secure land to build the shop and office facilities needed to continue and expand our work. We also need ongoing support for research, equipment and programs that connect farmers and the next generation with agricultural innovation.

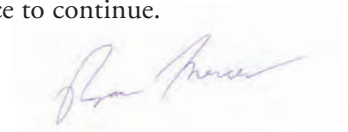
Agriculture is more than a business. It is the foundation of our livelihoods, the heart of our communities, and the legacy we build together.

A legacy gift to Farming Smarter can help ensure future farmers continue to have a place where practical research is conducted, new ideas are tested and knowledge is shared.

If you have land that could accommodate our research program, we want to hear from you. If you can help through a donation, legacy gift, land lease, purchase or donation of land, we invite you to start a conversation with us.

Farming Smarter exists to help farmers learn, adapt and keep looking for better ways forward.

Let's make sure it has a place to continue.



EXECUTIVE DIRECTOR'S REPORT

KEN COLES
FARMING SMARTER EXECUTIVE DIRECTOR



Farming Smarter's Home Quarter

Farming Smarter's roots reach back to the early 1990s, with the creation of the Southern Alberta Conservation Association and the Southern Applied Research Association. More than 30 years later, this non-profit charitable organization is ready to follow the example of our agricultural pioneering ancestors and stake our claim on a homestead quarter.

Of course, times have changed. We can't simply pay the $10 filing fee to the Dominion Lands Branch in Ottawa and "prove up" our claim by occupying the land for at least three years, building a house and barn, fencing, and breaking a portion of the land. Once established, that first parcel became known as the home quarter—the core base of operations.

That is our big challenge this year, as our current landlords have new plans for the facility we occupy. It has been a privilege to grow our organization here for more than 21 years, but it is time for Farming Smarter to establish permanent roots in the community.

It is no mistake that our organization's growth has been built on the legacy of our resources, our focus on people, and our dedication to serving the pioneering spirit of farmers and supporting industries in southern Alberta and beyond.

With growth comes change, and we are excited about the future and the opportunities that a home of our own can provide.

> **"It has been a privilege to grow our organization here for more than 21 years..."**

This comes at a time when Canada's agriculture innovation capacity continues to be strained and is looking for new ways to support the industry. Farming Smarter is ready and stepping up to the challenge. Our field agronomy program is likely the largest in Western Canada, and our model is efficient, responsive, reliable, and focused on providing verifiable results with tremendous impact and value. This year's field program is our largest to date, with more than 193 trials in 36 crops and more than 50 public and private partners. As the program grows, so does the need for strong systems behind the work. That is why we are developing a new Quality Assurance Program to support consistent research processes, dependable data collection and analysis, and clear reporting that partners and producers can trust.

We would like to thank and honour two employees who helped us get to where we are and have chosen to retire this year: Claudette Lacombe, our longtime Communications Director, and Toby Mandel, our Shop and Field Foreman. Their work, passion, and contributions helped pave the way for our current success. On the board side, we said farewell to John Kolk and Nathan Stamp and welcomed Bill Bezooyen and Catherine Kerkoff. We are also pleased to welcome Dakota Hanson, our new Market Engagement & Partnership Lead.

We appreciate all your support, and we will need it more than ever as Farming Smarter prepares for this important next step. Establishing a permanent home will require significant investment, careful planning, and the continued commitment of the farmers, partners, funders, and community champions who believe in practical agricultural innovation. While we are still shaping the path forward, we are beginning the important conversations that will make this move possible. If you see the value Farming Smarter brings to producers and to the future of agriculture in southern Alberta, we hope you will consider how you can stand with us when the time comes to raise the barn.

Have a great winter, and we look forward to seeing you soon at future Farming Smarter events.



PrairiesCan Grant A True Win-Win

Farming Smarter uses federal funding to advance the value-added sector

By Trevor Bacque



Since 2023, Farming Smarter has conducted mustard research for G.S. Dunn. Credit: G.S. Dunn

Quality research is the backbone to any crop being improved, grown and sold. Whether it's a better disease package, yield or marketability, without research, especially of the in-field variety, it's hard to imagine a crop finding a way to improve.

Farming Smarter does its part to give farmers and end-users the best possible options.

With a recent grant through Prairies Economic Development Canada, or PrairiesCan, Farming Smarter has made the most of its $792,000 (and matching contributions for a total of $1.58 million) since receiving the grant money last summer. PrairiesCan's goal is to grow and diversify the Prairie economy and advance the interests of Western Canada in national economic policy, program, and project development and implementation. A primary aspect of that is agriculture.

With the funding, Farming Smarter has 11 organizations supporting projects, designed to achieve better results for both their farmer members and their businesses.

"We have always been thinking about how we can increase our capacity and work closer with our industry partners," said Trevor Deering, Farming Smarter's commercial innovation manager. "A core value of ours is to support value-added agriculture and innovation in southern Alberta."

Deering said the organization is sought out by companies both small and large because of its proven track record to bring real life results to the table, ultimately helping companies and farmers alike.

"We are positioned to provide high quality, unbiased third-party research," he said, adding that Farming Smarter tests with no pre-determined outcome. No matter the results, whether positive or negative of a given product or practice, that information goes directly to farmers.

"That's one of our underlying goals and principles: to always have the farmer in mind with anything we do. Personally, that's why it drives me. We do care about the farmers and what's happening with them and to them."

Deering said with the grant, Farming Smarter has been able to buy new equipment such as a tractor and irrigation systems as well as hire people, including a quality assurance officer and technicians.

"It's been amazing to work with PrairiesCan," he said. "We are super grateful and look forward to the future."

Small crop, big boost

One organization that is a direct beneficiary of Farming Smarter's grant is G.S. Dunn, the largest mustard buyer in North America. All its production is split between southeastern Alberta and southwestern Saskatchewan. As a small, rotational crop, mustard isn't as sexy as that of canola or wheat, but research for it remains vitally important. Much of the federal research on mustard was curtailed decades ago. Dunn's agronomy and procurement director Marc Vincent said the work done at Farming Smarter has been invaluable.

> **"Farming Smarter is a very progressive research organization..."**

Since 2023, Farming Smarter has conducted various mustard research trials for Dunn. Those projects have included looking into optimal fertility requirements, pre-plant herbicide options, in-crop fungicides and seed treatments. Recently, Farming Smarter began a multi-year project for how boron and potassium may help combat heat stress in mustard, as well as looking into ways to combat different diseases, including blackleg and sclerotinia. Vincent said it's hard to find companies to perform trials and research on such a small crop.

Farming Smarter is a very progressive research organization looking to support growers, "which is exactly what we need as a small crop that doesn't get quite as much attention," he said.

Vincent describes Farming Smarter as very easy to work with and appreciates how staff work to create unique trials that will truly benefit farmers.

"Every year we have our annual planning session, and I have yet to have a request that they've said no to," explained Vincent. "They take the feedback and they're willing to learn. Some companies only do yield or spray trials, but Farming Smarter does it all."

Another company that works closely with Farming Smarter is Bayer, which supports the research organization's goal to positively impact Canadian agriculture.

"Our partnership with Farming Smarter has been instrumental in advancing our canola seed business. The innovation achieved through our collaboration in southern Alberta directly benefits growers across Canada," reads a statement from Bayer. **FS**



Alberta Rice And Futuristic Fabric

Why southern Alberta needs its own research for potatoes, sugar beets and other specialty crops

By Kristi Cox



Rice growing at Farming Smarter in 2025. Credit: Illimar Altosaar, PhD

VOCABULARY ALERT

Spidroins are the large, fibrous structural proteins (up to 3,500 amino acids) that make up spider silk, characterized by high tensile strength and elasticity.

Puroindolines are lipid-binding proteins found in wheat endosperm that are the primary determinants of grain hardness and possess antimicrobial properties.

Fibroin is a natural fibrous protein, famously produced by Bombyx mori silkworms and spiders, that serves as the main structural component of silk fibers.

Carlo Van Herk, Farming Smarter field operations lead, walked out in the Farming Smarter garden plots in September, pulled a rice seed off a plant, peeled back the husk, and was looking at a grain of brown rice. That moment revealed the potential for Alberta farmers to grow the building blocks of athleisure wear.

The first thought might be: "But wait - Doesn't rice grow in paddies in a tropical climate?"

That's certainly the most common way that the world's estimated 770 million tonnes of rice grows each year, but with upland rice, there are options. Biologically, rice is a grass. Paddy rice is a farming method, but not a biological necessity. It's tolerant of excessive water, but not dependent on large amounts of it, though it does require irrigation in Alberta.

In 2022 and 2023, Farming Smarter ran trials to grow rice in Lethbridge, and both years yielded biomass, but the plants didn't reach the flowering stage, and therefore produced no grain. However, these trials caught the attention of Illimar Altosaar, founder and CEO of the Canadian biotech company, Proteins Easy Corp.

Dr. Illimar Altosaar began developing his expertise in cereal breeding at the Quebec Provincial Seed Farm while still at Macdonald High School and later became

a professor of food biochemistry at the University of Ottawa, where he is now a professor emeritus. His career spanned crop genetics and protein science with research supported by major agricultural and biotechnology companies. He was also a key participant in the Rockefeller Foundation's International Program on Rice Biotechnology and led the development of genetically engineered insect-resistant Bt rice.

Now 'retired' in Lethbridge, Altosaar is focused on using genetic engineering to develop rice as a source of recombinant biomaterial proteins for medical, industrial and textile use.

Currently, high value proteins like insulin, GLP 1s, and industrial enzymes are produced using stainless steel fermenters that require a lot of water and energy.

"You have to purify that water," explained Altosaar. "You have to sterilize it in your 100,000 liter stainless steel fermenter. Where do you get the energy to heat 100,000 liters day after day after day?" Classical microbial biotechnology is unsustainable, he stresses.

Altosaar explained that while they are producing high value peptides, they are also putting a strain on the environment. And the challenge doesn't stop there.



All the culms from one rice seed planted May 23 2025, about ten major panicles on the right side and smaller secondary culms or tillers on the left side. *Credit: Illimar Altosaar*

"Once you've extracted your protein, what do you do with your fermentation broth?" asked Altosaar. "You have to treat it as sewage, (which takes) more energy, and then it goes into the ocean."

This is also a high-risk process, because any contamination can destroy an entire batch if not the factory itself forever, as in the continuing case of Genzyme's (Sanofi) Fabrazyme plant in Framingham, MA.

So instead of these traditional processes, Altosaar turned to rice to produce recombinant proteins, initially to protect crops from borer pests and now to clothe humanity.

Rice plants run on sunshine, rain and CO2, all free crop inputs from the atmosphere. If you need more protein, you plant more acres. Also, while fermentation broth is wet and can spoil, a rice kernel is dry and stable, and the protein in rice doesn't degrade.

The key to why rice specifically works so well for protein farming, is its lack of puroindoline and a soccer ball-like starch granule. Rice, oats, rye, barley and wheat all have this starch molecule, but in each of them, except the rice, puroindoline contains a chain of seven tryptophan amino acid residues that attach it to the heavy granule surface. This absence in rice creates an ideal 'landing zone' for a puroindoline fusion protein introduced into the rice plant by bioengineering.

Altosaar explains that by using genetic engineering, they can splice a protein-encoding gene of interest onto the seven-tryptophan domain so the protein of interest can grab onto the starch granule surface in rice.

There are many proteins that could be beneficial to humans, and silk is where Altosaar is focused right now.

The athleisure market wants alternatives to synthetic polyester, nylons and spandex that ultimately end up in landfills explained Altosaar. Silk is durable, but fully biodegradable.

"We are working with a computer design group at Imperial College London," said Altosaar. "They have designed artificial synthetic silk sequences that they're trying to express the old way in E. coli bacteria fermenters."

"We're using traditional agriculture and biotechnology to make these improved synthetic silk sequences for the textile industry," Altosaar continued. "65% of the world's landfills are full of (discarded) clothing, polyester, nylon, spandex, lycra, running shoes - those synthetic textile materials do not degrade ever."

By anchoring the synthetic silk protein to the starch granules in the seed, Altosaar created the foundation for a patented, low-energy extraction process.

The desired protein tethers to the heavy starch granules in the seed that act as stable anchors. After the rice seeds are ground into flour, powerful air currents classify the heavy starch granules from the rest of the grain material. Finally, a special gas acts like molecular scissors to snip the protein off the starch, allowing it to be collected as a dry powder.

"With that dry protein powder, it doesn't matter if there's a little bit of starch left in there," explains Altosaar. "We believe that when you push the protein solution through the spinnerets of an electro spinning bath, like vinegar, you'll coagulate the silk protein into a fiber. It's a fibroin or spidroin gene that came originally from spiders, and you'll end up with a spider silk filament in your bath."

An added benefit is that the byproduct is starch and rice protein, which can go to animal feed. There's no waste in the system. It yields a high value biotech product and animal feed product from the same acre.

When Altosaar connected with Farming Smarter about trialing upland rice varieties in Lethbridge, it was an easy yes.

They tried four varieties of rice in 2025, and one produced grain. Kitaake rice, a rapid cycling, upland variety from Japan, grew to about 25 cm, flowered and set seed.

> **"For producers looking for that next, innovative, novel crop, its worth keeping an eye on this in the years to come."**

"These Kitaake seeds from all +30 plants passed the germination test at 77% viability, and we planted those 'Alberta-grown' rice seedlings for the second generation with professor Michele Konschuh at UofL," Altosaar said.

"It's always fun to try something new if somebody has something they're passionate about," said Mike Gretzinger, Farming Smarter research manager. "We gave him a little plot within our old garden area to grow some rice. Some of the plants had grains, but not all, so there's still work to be done."

It will take some time before farmers can start plot trials.

"That will only happen when we have a successful and repeatable growing season," said Gretzinger.

But there's a lot of promise. For producers looking for that next, innovative, novel crop, it's worth keeping an eye on this in the years to come. There is no need for equipment beyond what every grain farmer already owns. Not only could growing rice provide food for humans, but once transgenic rice is approved like Bt and RR canola, farmers could play a key role in providing sustainable textile options and animal feed, or even a key protein needed for medicinal uses.

This is currently at the proof-of-concept stage for the biochemistry and Altosaar is determined to keep it as Canadian technology. He's seeking investors to help take it to the next level.

It will take a few years to go through the regulatory process to grow transgenic rice, but there is already interest from end users in the industry.

"We are dealing with thread companies and textile companies, and we're even approaching a Swiss company that coats most thread in the world," said Altosaar.

That first grain of rice now points to a much bigger possibility. If upland rice can be grown reliably and approved for recombinant protein production, Alberta farmers could one day produce not just food, but the building blocks for biodegradable textiles using the same equipment they already own. **FS**

Making Winter Camelina Work For Growers

Field research aims to encourage producer uptake for oilseed crop

By Jeff Gaye

Earlier this year, Bayer Life Sciences formed a strategic alliance with BP, the British-based energy company, to scale camelina as a biofuel crop.

Dr. Christina Eynck works on developing oilseed crops at the Saskatoon Research and Development Centre. She says fall-seeded camelina has the potential to play a valuable role in Prairie crop rotations.

Winter camelina has demonstrated exceptional winter hardiness on the Prairies. The crop can help protect soil from winter and spring erosion, and can help farmers make use of marginal land. With its short season, it can be harvested by late July, allowing for a second crop to be seeded.

Eynck says that while there is more research to be done on agronomy and genetics, uptake and general acceptance of camelina will depend more on value chain and other commercial considerations.

"My biggest concern is not about the crop itself," she said. "The question is whether the entire value chain develops in a way that creates lasting value for growers. Successful crop adoption requires strong genetics, a solid agronomic package, reliable markets, and long-term commitment from industry. All of those pieces have to work together."

The Bayer-BP strategic alliance has increased investment and created new opportunities, she said, but



Winter camelina seeds may be small, but its exceptional winter hardiness makes it well suited to prairie growing conditions. Credit: Farming Smarter

"whether that translates into widespread adoption will ultimately depend on economics and grower profitability."

Meanwhile, Farming Smarter has been conducting field trials aimed at establishing solid practices for seeding and growing camelina. Farming Smarter research scientist Thierry Fonville says the idea is to maximize the chances of a successful crop that will take advantage of camelina's low production cost.

"Its main selling point is that fertilizer cost is very low. And moisture requirements, once the crop is established, are pretty low as well," Fonville said. "It has a lot of potential there, especially on marginal land or in shoulder seasons."

Fonville and Farming Smarter research manager Mike Gretzinger have been conducting the trials on dry and irrigated land. They have experimented with broadcast seeding and planting at various depths, at different times, over extremely variable seasons. Gretzinger says it's still hard to pin down the most advantageous practices.

"I think we're still not understanding as much as we'd like to, and the big challenge with novel crops is just that you don't have as big of a margin for error," Gretzinger said. "We've been growing wheat and barley for millennia. And you might mess up the planting or you might have all sorts of little things that could go wrong, but generally there's a decent crop."

The field research is a matter of narrowing the variables and gauging successes against failures.

"It's always complicated because each year is not going to be the same," said Fonville.

"This goes back to that moisture question, where we can have a drier late summer or fall and then having enough moisture in the ground to ensure that camelina emerges properly before heavy frost sets in," he said. "That's where a higher seeding rate will help you."

At this stage of their research, Gretzinger says a higher seeding rate appears to be the way to go — depending.

"Between two test sites, one has shown a correlation between seeding rate and yield, where the other consistently yielded approximately 1,400 kilograms per hectare regardless," he said.

"I think overall a little higher seed rate is good, but it's not a guarantee. And it's not a direct one-to-one ratio either," Gretzinger added.

Pending independent analysis of the data, Gretzinger says soil moisture at seeding appears to be the most significant variable affecting robust and timely emergence. Obviously, this gives irrigation an advantage over dry land.

The other variables — planting depth or broadcast seeding, and timing — can mitigate unpredictable moisture on dryland acres.

"What we want to see is a robust set of management practices that can ensure you're going to have successful emergence, successful winter survival, and then a healthy crop yield at the end."

Flowering winter camelina plots at Farming Smarter during summer of 2026. Credit: Farming Smarter



"Even the difference that one week might make — it seems ridiculous, you don't think one week can make that big of a difference — but just timing and optimizing soil conditions and that moisture effect and depth effect can be really impactful," Gretzinger said.

Eynck says Farming Smarter's 'Saving Soils' research is an important piece of the overall picture.

"I believe winter camelina has the potential to occupy a unique place in Prairie cropping systems because it utilizes a different part of the growing season than traditional spring-seeded crops, which creates opportunities that are difficult to achieve with conventional annual cropping systems," she said.

"Continued breeding progress is important, as well as greater familiarity among growers with the management of winter crops. Just as important are stable market opportunities that provide growers with confidence to incorporate the crop into their rotations over the long term."

Fonville agrees. He says the ideal outcome from the field research would be that "producers are confident they can fit camelina in their rotation if it's suitable to their operation."

"What we want to see is a robust set of management practices that can ensure you're going to have successful emergence, successful winter survival, and then a healthy crop yield at the end.

"I think most producers are looking at ways that they can diversify their system without too much overhead or too much risk," Fonville said. "That's what it comes down to." **FS**

Lower Rates Of Enhanced Efficiency Fertilizers Maintain Yields

By Lee Hart



Yield results from a one-year Farming Smarter research project shows that winter wheat yields can be maintained with a reduced rate of nitrogen delivered in the form of an enhanced efficiency fertilizer. Credit: Farming Smarter

Yield results from a one-year Farming Smarter research project shows that winter wheat yields can be maintained with a reduced rate of nitrogen delivered in the form of an enhanced efficiency fertilizer (EEF).

The field scale trial, conducted at Stamp Seeds farm near Enchant, compared urea applied at 100 per cent and 80 per cent rates with a combination EEF product Anvol and U-Pro also applied at 100 per cent and 80 per cent rates.

"We haven't done a final analysis of all the data but looking at yield information I couldn't find any significant difference between the treatments," says George Joseph Jr., field technician at Farming Smarter who organized the trial. "It is a good indication that reduced rates of enhanced efficiency fertilizer can maintain yields, but further work repeating the trials would confirm results."

The research trial, funded in part by Farmers for Climate Solutions, shows that enhanced efficiency fertilizer can play an important role in crop production. From this trial along with other research over the years, an 80 per cent rate of an EEF nitrogen product, for example, can produce

the same yield as a 100 per cent of a conventional nitrogen product such as urea. The reduced rate of an EEF may not reduce input costs, depending on the product, but it will help reduce the risk of nitrogen being lost in the environment either through leaching, denitrification or volatilization.

"With comparable yields from all plots, I would say the EEF product did what it was meant to do," says Rigas Karamanos, a long time Calgary-based soil scientist, recently retired as senior agronomist with Koch Fertilizer Canada. "The very definition of an enhanced efficiency fertilizer means that it can be used at a reduced rate."

While the Farming Smarter research trial intended to use an EEF product called SuperU manufactured by Koch, sufficient quantities were not available for this research project. A comparable EEF product was a combination of Anvol and U-Pro. Anvol is nitrogen with a urease inhibitor that reduces the risk of nitrogen being lost to the atmosphere through volatilization, while U-Pro is nitrogen with a nitrification inhibitor which works below ground to reduce the risk of nitrogen loss through leaching and denitrification.

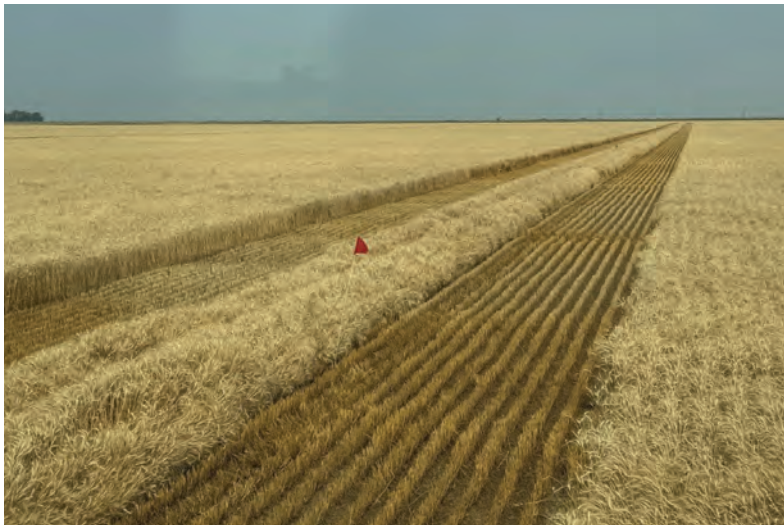
"Thanks to the support of Farmers for Climate Solutions, we were able to conduct this field scale trail using conventional farming equipment."

"Farming Smarter has compared different forms and rates of nitrogen, including enhanced efficiency fertilizer products in smaller research plots," says Joseph. "But what happens when you take this trial to a field-scale level? Thanks to the support of Farmers for Climate Solutions, we were able to conduct this field scale trial using conventional farming equipment."

The field scale trial involving winter wheat was seeded by the producer in September 2025. They used an air seeder disk drill with 10-inch row spacing. A starter fertilizer of nitrogen and phosphate (11-52) was banded with the seed and the nitrogen (46-0-0) was mid-row banded all in the same pass. The trial site was about 60 acres out of a 285-acre field under pivot irrigation. The plots were 60-feet wide to match the width of the farm's air seeding equipment.







The field scale trial, conducted at Stamp Seeds farm near Enchant, compared urea applied at 100 per cent and 80 per cent rates with a combination EEF product Anvol and U-Pro also applied at 100 per cent and 80 per cent rates. Credit: Farming Smarter

Along with a check strip that had no fertilizer applied, other treatments included plots with winter wheat seeded at 100 per cent and 80 per cent recommended rates of nitrogen in the form of urea, as well as plots of winter wheat seeded with 100 per cent and 80 per cent rates of nitrogen in the form of the Anvol and U-Pro EEF products. The field scale plots were swathed and harvested in late August 2026.

"Being able to reduce fertilizer rates by 20 per cent may or may not save a producer money," says Rosalie Gillis-Madden, an agronomist with Farmers for Climate Solutions. "But it does help reduce the amount of nitrogen needed. And with the enhanced efficiency treatment it greatly reduces the risk of nitrogen losses to the environment.

"Nitrogen is one of the most complicated nutrients to manage because growing conditions can change from year to year, and season to season," she adds. "And conditions, such as temperature and moisture, for example, can really affect the nitrogen loss pathways. If we can anticipate the risk factor, know the conditions under which fertilizer is applied, then producers can make better decisions about which enhanced efficiency fertilizer is most suited for those conditions."

> **"Conditions such as temperature control and moisture, for example, can really affect the nitrogen loss pathways."**

Gillis-Madden says the 4Rs of nutrient management — the right source, the right rate, the right time and the right place — all apply in selecting an effective enhanced efficiency fertilizer.

Along with that, Karamanos notes that the method of fertilizer application is also an important factor. "If nitrogen is going to be deep banded — say in that three- to four-inch depth range — there is no need for an enhanced efficiency fertilizer," he says. "If using urea, for example, and it is deep banded, the nitrogen will begin to break down into a gas, but it will be trapped in the soil.

"However, if the fertilizer is broadcast applied or shallow banded at one to two inches, then there is a greater risk of nitrogen loss and that's where the EEF products can play an important role." **FS**

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Farming Smarter Enters Its Next Era

After a record year of research growth, expanded staff, new equipment and broader industry engagement, Farming Smarter is preparing to transform its facilities and capacity for what comes next.

By Sean Kjos

For nearly 4 decades, Farming Smarter has consistently pushed the envelope for "normal". Their research has played a role in transforming southern Alberta's landscape; fields saw new crops replace fallow practices while farmers tilled less and adopted new technologies. Now, the organization that strives to evolve the agriculture industry is at the precipice of its largest evolution yet.

While the non-profit charity has grown each year, even before its amalgamation in 2012, this past year saw a noteworthy amount of growth. Farming Smarter grew its roster of full-time staff to 14 during the fall of 2025 and spring of 2026 to prepare for its biggest year of research.

The research team experienced a 59% increase in the number of plots managed in 2026 – a staggering 11,762, up from 7,414 plots – which demanded a significant amount of coordination and oversight to ensure everything was seeded for all 193 trials across multiple fields in southern Alberta.

Even with the increase in full-time staff, 14 students were hired to assist with the workload both in the field and out this summer.

Carlo Van Herk is the field operations lead at Farming Smarter and creates the field maps for all the organization's research and coordinates the equipment, ensuring it's maintained and available without issue. This summer, he managed his largest Field Ops crew to date, including training a new full-time team member, and welcoming a new baby whilst ensuring the three research teams experienced smooth operations.

"Growth always comes with its challenges or pains, and there's always things you can't expect when you're planning out the season in March and April," Van Herk says. While the team's ability to quickly adapt made tackling more than 11,000 plots easier, Van Herk cites the expansion of the organization's equipment as a major contributor to the success of this growing season.

"We were able to manage the trials better and cut down on the man-hours we'd have to spend managing the site. Our inter-row tiller and row divider let us mow between rows, which was a great help – especially when you have 600 seed canola plots to mow," he comments.

Lewis Baarda, field tested manager, also saw the expansion of equipment at Farming Smarter as a highlight. However, for him and his team, the new equipment opened up the opportunity for the team to do new research as well.

Over the past three years, Baarda has led the potato agronomy research at Farming Smarter, which he has grown a considerable amount each year. His philosophy for the program is to build capacity ahead of new ventures. "As we dig further into potatoes, we've been realizing the various markets we can apply our research expertise towards," Baarda explains. Adding, "if we can have the right tool for the job, it makes our lives so much easier."

> **"The research team experienced a 59% increase in the number of plots managed in 2026..."**

This year, Baarda's goal for new equipment was to elevate his team's efficiency, especially with variety research – an area of research he believes to hold the biggest potential for growth. To elevate his team's efficiency, Baarda purchased a new cone planter that allows the team to plant multiple varieties throughout the field by loading them on demand.

However, Baarda's favourite enhancement was the upgrades he put into the current planter's belts this winter. A decision he took no time to second guess and was elated to have for the season, "we had to physically manipulate the gear ratios to get the right space when we did

seed spacing last year. Now, we just hit a button and it's ready."

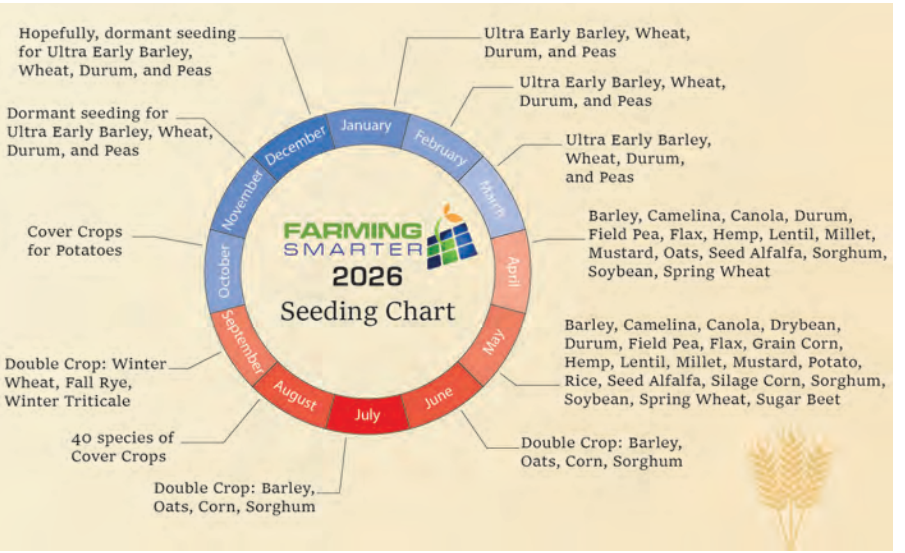
However, unlike Baarda, Van Herk's favourite part of the 2026 growth is the potential for Farming Smarter to seed a crop every month of the year. A dry winter saw the team finally beat their 2022 personal record for the earliest seeding date of February 14, when they seeded barley, wheat, and pea varieties for a similar Ultra Early demo on January 13, 2026. Should a dry stretch pass through southern Alberta this December, the team will have finally achieved the goal of year-round seeding.

"Change isn't always linear; it ebbs and flows with slower, incremental progress building into these big jumps of fundamental change," weighs Mike Gretzinger, agronomy research coordinator at Farming Smarter. "This year feels like it's culminating in a fundamental shift – like everything we've been building towards all came to fruition at the same time."

Gretzinger joined the Farming Smarter team in 2010 and has since been witness to the organization undergoing multiple changes and expansions. As a keen believer in iterating your processes, adapting to the organization's growth has become nearly routine for him.

"Really, it's just making sure we have the resources we need and then identifying the low-hanging fruit." Gretzinger is quick to share two examples from his early years at the research organization that underline his emphasis on solving the simple problems first, "I remember showing up at 6:30 in the morning to go spray and there's not a truck left in the yard because everybody else showed up at 6. The next summer, we rented some trucks and the problem was gone."

Farming Smarter Plants Trials Year Round



"When I started, we had everything for our projects on a big whiteboard that we used to track what we did that week and what we had to do the following week. Eventually, we got to the point where it would have taken a student or technician at least an entire afternoon to update each project, if not an entire day. Now, before the season starts, that information is all digitized," Gretzinger shares.

Gretzinger's approach to iterative growth each year has helped secure a sturdy foundation for each of the organization's programs to grow independently. Trevor Deering, commercial innovation manager, adopted a similar strategy that's strengthened his relationships with industry clients.

Deering's team assists companies with the commercialization of their products and varieties, providing an unbiased third-party analysis of their performance. While his workload continues to grow, he's encouraged his clients to participate in a more hands-on approach with trial design.

"We'll do pre-season briefings to go over everything they want, to make sure they understand the trial and that it achieves what they want. Then, we do a deep dive into the data and share what it means, along with how the trial went, in a post-season debrief," Deering explains.

Beyond the research, Farming Smarter's Knowledge & Network team had its biggest year with nearly 20 events and tours on the docket for this year. Key highlights of theirs include an international tour that took 30 people on an adventure through Australia and New Zealand, the opportunity to showcase the strengths of agronomy research in southern Alberta not only to a group of delegates from South Korea, but to the Federal Minister of Agriculture, Heath MacDonald.

As the organization prepares to undertake the transformation into Farming Smarter 2.0 and grow its facilities and capacity to support a stronger agriculture industry, the team invites you to follow the journey. Though if you're keen to play a bigger role in that pursuit, you're encouraged to reach out!
FS

Farming Smarter Travellers Come Home With Newfound Knowledge

Australia and New Zealand visit underlines the understanding as much as the techniques

By Jeff Gaye

The 2026 Farming Smarter international trip took participants to Australia and New Zealand in January. The trips connect Alberta growers to farmers and ag-sector workers around the world, exploring similarities and differences in their approaches and techniques.

Jamie Puchinger, Farming Smarter assistant manager, participated in the 2026 trip. She says the value of the connections transcends the everyday work of farming.

"There is always a desire for farmers to connect with other farmers. They love talking to each other and connecting on a personal level," Puchinger said.

Kim Taylor, an Alberta farmer and another participant, was particularly struck by the relationship between researchers and growers.

"I took away from this trip how important collaboration between farming and research is," she said. "The ability to manage cost versus production and revenue not only comes from farming decisions but also from research-based improvements in farming technology."

Puchinger agrees that there are similarities in the management challenges farmers face around the world, but it's differences in climate, water resources and soil that affect production methods. She recalls meeting a wheat grower in New Zealand who has twice set world records for production — not necessarily by doing anything different from what is done on the Canadian Prairies.

> **"I took away from this trip how important collaboration between farming and research is."**

"You seed in the right seeding window and you seed at the right rate, at the right depth, and all the things that make the agronomy good for your area," she said. "We apply the same principles. But when we look at their season, they get 10 months of growing time. We get four."

According to Taylor, even with the different climate, crops and production systems, "farming has the same challenges no matter where you are. From dealing with weather conditions, rising cost of production, government policies and bureaucracies, it is a tough game no matter where you are."

Taylor added that the trip showed her "the passion that all farmers and agricultural researchers have for the ag industry."

The exchange of information during these international trips reinforces the legendary optimism of growers, their dedication not just to production but to improvement, and the importance of connection. Planning is underway for the 2028 trip to South Africa and Zimbabwe. Both Puchinger and Taylor encourage people to take advantage of the opportunity.

"It's connecting with your peers. It's connecting with the people we were visiting, and learning from them and with them," Puchinger said.

"It's not necessarily learning about a practice or a tool that you're going to be able to use instantly to make an economic difference on your farm," she said. "It's about learning how they're overcoming challenges, and things that you could incorporate into your work or your lifestyle."

Taylor is enthusiastic about the value of her 2026 participation and doesn't hesitate to endorse the experience.

"This was one of the best trips I have been on," she said. "From learning about different farming processes, mixed in with some sightseeing, it was definitely a trip to remember. I would definitely recommend going on one of these trips." **FS**



Specially designed irrigation system for Farming Smarter research trial. Credit: Farming Smarter

Project Evaluates The Impact Of Limiting Moisture On Spring Wheat

By Lee Hart

Yield results will be available later this fall from the first year of a Farming Smarter research project looking at the impact of limiting the amount of irrigation water applied to spring wheat.

Why would limiting water be a good idea? The premise behind the four-year research project is all about learning how to best manage the application of irrigation water, especially in dry years when water allocation to farms is reduced. If a farm only has so much water for the season, where do they get the biggest bang for every drop, and what really is the impact if the amount of water applied to crops such as spring wheat is less than optimal? How big a hit is that?

Perhaps the 2026 growing season started out with Mother Nature throwing the research project a bit of a curve ball. In early spring parts of southern Alberta received quite a bit of rain fall, according to Lewis Baarda, Farming Smarter field tested manager. "But in the previous four or five years we had almost drought conditions," he says. "Irrigation reservoirs were low, there was little or no rain, and water allocation to farms was reduced. So, if a farm was allocated 10-inches instead of 16-inches of irrigation water, for example, how can that water best be applied? What is the impact if the amount of water applied to a cereal crop is reduced in favour of applying more water to a higher-value crop? And what are the actual water requirements of a crop such as spring wheat?"

> **"Irrigation reservoirs were low, there was little or no rain, and water allocation to farms was reduced."**

These are all questions the research project being conducted at multiple sites in and around Lethbridge will hopefully answer in the coming seasons. Baarda says to

keep things simple, the project started out using spring wheat as a test crop for reduced water during the growing season. In future years they hope to evaluate the same treatment on other crops.

The trial was conducted at three sites (Lethbridge and Coaldale areas) in 2026, designed with larger than usual research plots each measuring 6 x 6 meters, and irrigated with specially designed irrigation equipment. At each site, one plot received no irrigation water (rain only), three plots received four, eight and 10 inches of irrigation water respectively, and a fifth plot received as much irrigation as needed.

> **“A reading of 65 per cent or below means the plant is having to exert too much energy to take up water and not able to grow.”**

Soil moisture probes at all sites provided the critical information of when to apply moisture to those plots receiving irrigation water. If the moisture sensors showed soil with 65 per cent of less moisture, that is really quite dry, says Baarda. “A reading of 65 per cent or below means the plant is having to exert too much energy to take up water and not able to grow,” he says. “If the sensor was near 65 per cent moisture we applied about an inch of irrigation water to get soil moisture levels back into about the 95 per cent range.”

For the 2026 growing season, May and June had considerable rainfall so no irrigation was needed; however, July was quite dry. As soil moisture levels dropped to the 65 per cent range plots were irrigated every three or four days to bring soil moisture up closer to 100 per cent. But again, irrigation water was only applied up to the maximum for the season of those three plots — four, eight and ten inches of irrigation water.

“The only visual difference involved the plot that received no irrigation compared to plots that did receive irrigation,” says Baarda. “Perhaps not surprisingly, the rain-only plot was struggling as the season progressed. But we will need to harvest the plots this fall to compare yield and quality of the grain to determine the impact of different moisture levels.”

This is only the first year of a four-year trial, but it will provide some indication of how wheat yield was affected at different moisture levels and will give a clearer picture of the actual moisture requirements of this particular spring wheat variety. **FS**



Grow The Tools For Success With In-Field Events

By Sean Kjos

You learn a lot spending time in the field. But you can learn even more when you step into the field with brilliant minds.

Farming Smarter's Field School brings progressive farmers, researchers, and industry partners together to see emerging technologies and cropping trends, and receive tangible, science-backed solutions from industry experts and researchers.

As the research facility's flagship summer event, the Farming Smarter Field School takes its guests directly to the field for a first-hand look at plot trials for each session.

Leaders and decision makers have long enjoyed it as an opportunity to build new connections, strengthen old ones, and hear about new ways to stay competitive and on the leading edge. It's become the perfect place for young farmers and agronomists to quickly grow their knowledge and networks.

"Attending Farming Smarter's Field School provides direct exposure to specialized, regional research. Agronomists learn about vital, practical topics directly applicable to client advising they can use to better guide growers through evolving environmental and economic conditions," says Opeyemi Olaogun, an agronomist at 2nd Opinion Consulting Inc.

In 2026, Farming Smarter split its Field School into two one-day events; a dryland crop-focused event in June and an irrigated crop-focused event in July to accommodate the region's diverse mix of dryland and irrigated acres.

Even just attending the irrigation-aligned July Field School provides incredible value to agronomists in southern Alberta, Olaogun says. "Events like the July Field School heavily emphasize irrigation and moisture management. Balancing this with dryland experience ensures you can strategize effectively regardless of water availability or moisture zones," he states.

Farming Smarter strives to keep their events relevant to the trends and challenges throughout the agricultural industry, especially in southern Alberta. Both Field Schools provided growers and agronomists with the opportunity to dig deeper into these topics.

With more irrigated growers adopting pulses, the July Field School presented growers with how to identify different pulse diseases. Meanwhile, renowned potato agronomist from Prince Edward Island, Steve Watts, spoke to the trending change towards more sustainable fertility management in southern Alberta's potato industry with insights and advice from when PEI experienced similar cultural changes with their fertility management practices.

"It's become the perfect place for young farmers and agronomists to quickly grow their knowledge and networks."

Similarly, Ray Flickner, from the Flickner Innovation Farm in Kansas, shared his knowledge about strip-tillage on irrigated fields to give growers and agronomists a chance to learn more about the practice.

The June Field School gave farmers many opportunities to hear about dryland oilseed production with sessions on better fertility management for canola, as well as oilseed alternatives to canola and camelina. Experts Ken Jackle and Marc Vincent from University of Saskatchewan and G.S. Dunn, respectively, gave practical agronomy sessions on flax and mustard, giving growers the opportunity to ask questions related to their operation and find which crop would best fit into their rotation.

Attendees were given the first look at Farming Smarter's latest project in advanced weed management. A new, three-year exploration of cultural practices to manage wild oats was introduced by the organization's Trevor Deering and Thierry Fonville.

Farming Smarter is excited to showcase its new projects at the 2027 Field School in June and July. **FS**

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Lookin' Up

Are drones all that they're cracked up to be?

By Trevor Bacque

Many in the ag industry are flying high after learning that drones are now allowed to apply pesticides already registered for aerial application. The move from the federal government came on June 30, 2026, and they said that drones can be a viable alternative due to their ability to fly from confined sites and be lower to the crop canopy with greater precision. The government also noted how drones use less fuel, making them a sustainable alternative for many pest management tasks.

At Valley Precision Ag in Bridgetown, Nova Scotia, Charles Turcotte says he was elated with the decision. As a precision agriculture specialist, his job is to arm farmers with the skills necessary to operate drones in farm settings. He has spent the last few years lobbying just about every decision-maker who lends an ear and now, the rules have changed. Turcotte couldn't be happier.

"They are a fantastic tool in a farmer's toolbox for certain applications," he said, adding that for smaller provinces with small or irregularly shaped farms, smaller roads and specialty crops, drones are a game changer.

"The traditional sprayers are larger, a lot more expensive and have a higher carbon footprint," he said. "They don't easily have the ability to spot spray."

> **"The partnership of two passionate organizations means they make a positive impact on both the individual farmer and agriculture across the globe."**

Many farms, especially non-broadacre, still employ workers with backpack sprayers or applying off a moving quad, which carries different risks. With a drone, spraying can be done easily and safely.



Charles Turcotte

Turcotte knows a drone won't replace high clearance sprayers any time soon, but he still sees their utility, even in broadacre settings.

He points to the example of desiccating canola with a drone pre-harvest. By not driving through the field, a farmer saves significantly on diesel and eliminates the possibility of damaging the crop. Even with the extra time commitment, the farmer can be better off by using the drone.

The largest upside Turcotte sees for drones is the positive environmental impact, saved money and reducing human health risks. He says this is especially true for certain crops in Nova Scotia, such as wild blueberries and Christmas trees.

"There's lots of uses where they shine," he said.

> **“We are at the tip of the iceberg for innovation… We are going to learn some lessons along the way, good and bad, but we’ll be better for it in the long run.”**

High clearance sprayers still king of the West

Even though farmers will opt for their sprayer, there are plenty of reasons why farmers in Western Canada have interest in drones.

At Chris Procyk’s Fillmore, Sask., farm, he sure wishes he had a drone this year. A few spots became too wet to enter into for fungicide treatments after the crop was established.

Five of his quarters form an L shape, with four being fine; however, all four drain into the last field, which he simply abandoned.

“You just couldn’t get in there with a ground rig without making ruts,” he said.

Procyk intends to look into the cost and set up, and believes there’s good reason to purchase a drone. As vice-president of the Agricultural Producers Association of Saskatchewan, he’s keenly aware of new and emerging trends in agriculture. He believes drones are here to stay and that we are only just beginning to see their potential.

“We are the tip of the iceberg for innovation,” he said. “We are going to learn some lessons along the way, good and bad, but we’ll be better for it in the long run.”



Tom Wolf



Chris Procyk

Not so fast

One spray expert who has been keenly following developments in sprayer tech is Tom Wolf. With 30-plus years’ experience in spraying and its tech, he isn’t believing the hype about drones; at least, not yet.

“It is a unique and different application method,” he said. “Many of the things we know and assume in spraying practice don’t apply with drones. There is a whole new bit of learning that needs to be done by regulators and applicators both.”

Wolf believes much more quality research needs to be done before he would provide an endorsement.

He does readily admit that a drone is the perfect tool to deal with an annoying final 20 acres 15 kilometres away. Similarly, they’re incredibly capable to get into soaking wet fields and low spots unsafe for a sprayer.

From what he sees as of now, drones are a non-vital but quality tool for farmers. With the government’s announcement, Wolf is sure it will move the needle, but only temporarily.

“It’s more likely that the adoption rate will peak and then go down again,” said Wolf. “The quality of the work that drones do is questionable.”

He points to inconsistent deposition and swath width as but two primary issues.

Still, for Procyk, there’s reason to stay excited.

“It’s the next evolution of spraying. It may not replace a ground rig completely, but it’s another support tool to us.” **FS**

Spuds Make Peace With Clay While Farming Smarter Digs Into Potato Research



845 Spud Farms makes the farm's heavy clay soil work by adjusting standard practices and running trials specific to their needs. Credit: Michiel Buijsse

By Kristi Cox

845 Spud Farms in Coaldale, Alberta is a successful 1,650-acre processing potato farm on land the farm's co-owner Michiel Buijsse describes as "not very favourable potato land." And yet they make the heavy clay soil work by adjusting standard practices and running trials specific to their needs.

Farming Smarter is now three years in to running potato trials, working to answer the questions growers like Buijsse run into. They are exploring what inputs and practices move the needle on yield and quality. The goal is to build a local knowledge base that Alberta's potato industry is missing.

On the farm

For 845 Spud Farms to find success, partners Buijsse and Bill Bezooyen had to shift several traditional processes. Timing, rotation and inputs all had to be examined.

"Conventionally, people would work up next year's potato land after harvest is complete, but we moved that earlier, so the land has more time to establish a cover of volunteer grain, weeds and whatever comes up," Buijsse said. They will seed cover crops if conditions don't favour adequate volunteer growth "It starts to grow in August, the roots grow into the heavy clay and then in the winter, the weeds die off and the lumps break up well in the spring for potato seeding."

The right rotation supports this. Buijsse explained that 90 per cent of the time, potatoes follow barley, since it is one of the first crops to come off. After potatoes, they usually seed winter wheat, ensuring the land stays covered at any given time, minimizing erosion.

Another challenge with clay soil is that there is a very small window of a day or two when the ground is just right for seeding and harvesting. It can't be too wet or too dry. This means they are usually seeding a week to 10 days after potato growers with sandy soil. It also means needing more equipment to get everything done in that short window.

Sorting out what inputs are optimal required running their own trial.

> **"Another challenge with clay soil is that there is a very small window of a day or two when the ground is just right for seeding and harvesting. It can't be too wet or too dry."**

"We set up a 150-acre trial last year," Buijsse said. "We tried 10 different products side by side. We took over 70 10-foot samples out of this field. We took a whole pass with the harvester, weighed it, graded it and collected all the data. But we don't have the knowledge in-house and the time to process (the data), so Farming Smarter helped us with that."

They adopted the resulting best practices onto their farm. One example is that the high calcium content of the heavy clay soil ties up the phosphorus, seemingly resulting in fewer potatoes per plant compared to lighter soils. On the recommendation of a neighbouring farmer, they adopted humic acid to increase the phosphorus availability. This had great results, and now they're sorting out the logistics of handling it the most effectively on farm.

They're also finding success adding solid feedlot manure.

"Because the whole farm was no-till, we couldn't add manure because it had to be incorporated," Buijsse said. "Now with potatoes, we can. We are buying manure in large amounts and we're starting to see a big difference in soil health."

They're not done trialing different things. To battle erosion, this year they're trialing seeding barley, and potentially yellow peas, in between the winter wheat.

"The idea is that the barley would emerge faster than the winter wheat," Buijsse explained. "The barley establishes quicker and is pretty much a wind fence for the winter wheat. As soon as the first hard frost comes, the barley lays down, keeping the soil in place. Then the winter wheat comes through because it keeps going through the winter, which the barley doesn't."

There are still questions that need answering.

"We struggle with specific gravity," Buijsse said. "Our gravities are always too high, and I would like to find (solutions) to bring that down."

This is exactly the type of question that leads Farming Smarter's trial plans.



Michiel Buijsse, and family, co-farm 845 Spud Farms in Coaldale. Credit: Michiel Buijsse

Farming Smarter

There are three areas of research getting the first focus at Farming Smarter: crop inputs, soil protection/erosion, and fertility management/timing.

Potatoes are a high value crop, and Lewis Baarda, field tested manager at Farming Smarter, sees a high motivation to determine what inputs are beneficial.

We change the way people farm through grounded on-farm innovation.

"There is an appetite to invest in anything that we think might boost the production," he said. "What products work, what don't, when do we apply them? How do we get the biggest bang for our buck and make sure we still get a good potato?"

Most producers grow for markets with specific needs. It isn't just about high yield. It's about high yield of potatoes that are the right shape, size, quality and specific gravity, and those parameters change depending on if they are growing table, processing or chip potatoes.



845 Spud Farms in Coaldale, Alberta is a successful 1,650-acre processing potato farm at Coaldale. Credit: Michiel Buijsse

"A lot of our trials have been multi-site, multi-year trials," explained Baarda. "We're replicating a protocol and building that data set. On the input side, we're working with different companies to help them fine-tune the placement or timing or determining which products are working. It's proprietary at this point, but it helps them develop a product they can believe in."

There is also interest in knowing how to grow potatoes without compromising the soil and rest of the rotation. Farmers are being pushed to protect their soil, Baarda said, but they also want to be confident they will maintain yield and quality as they adopt those practices.

"That ties back to work we've done over the years even before we grew potato plots," explained Baarda. "The cover crop piece and erosion mitigation practices. How do we till? How does it fit into rotation? Can we protect that soil from blowing?"

This year, Farming Smarter completed a trial to look at the impact of some cover crops and how they might influence the yield and quality of the potato.

Farming Smarter has been looking at fertilizer response in potatoes. Fertilizer strategies are not standard among the growers we have connected with. Farms are using timing and rates of nitrogen that suit their needs and contstraints. Farming Smarter's work can use science to help farmers fine-tune their fertilizer strategies for maximum benefit.

After a year of studying yield response to nitrogen fertilizer, we are not observing the sort of textbook response curve we might expect. This could indicate there may be an opportunity to reduce fertilizer without compromising yield. Of course, it is early days for this study, and as we add data and results from more years and locations, a clearer picture should come into view.

Fertility ties back into the quality piece. Baarda explained there is interest in manipulating the timing and source of nitrogen, so the potato gets it when it needs it.

"We have a few potential projects coming up, but we'd love to continue to hear from stakeholders to know what they'd like to see happen for local potato research."

"We're hoping to do some fertilizer placement work, looking at banding versus broadcasting," said Baarda. "We've submitted a full proposal to do work on some soil amendments. And we're looking at manure inputs into the soil and how that ties to the yield and quality."

There is no shortage of questions in need of answers.

"I think we're probably under-researching potatoes in Alberta, considering the size of the industry," said Baarda. "Farming Smarter is growing every year. We have a few potential projects coming up, but we'd love to continue to hear from stakeholders to know what they'd like to see happen for local potato research. We're keen to keep doing it so producers can say, 'we know what works here in southern Alberta because Farming Smarter has done the work.'" **FS**

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Farming Smarter Builds A Three-Year Strategy To Tackle Persistent Wild Oats

Project examines crop competition, tillage, cover crops and herbicide strategies to reduce wild oat pressure and deplete the weed seed bank.

By Janet Kanters

Wild oats can be a long-term problem for Prairie farmers because controlling the plants in one season does not necessarily prevent another flush from emerging the following year.

Farming Smarter is taking a multi-year approach to the problem, examining how crop competition, tillage, cover crops and herbicide strategies can be layered to reduce wild oat pressure and gradually deplete the weed seed bank.

The three-year project involves canola, peas and wheat and will build from three treatments in the first year to 27 treatment combinations in the final year. Carlo Van Herk, field operations lead at Farming Smarter, says the objective is to address wild oats beyond a single growing season.

"The long-term strategy is to decrease the weed bank enough so that you don't have any issues with wild oats returning year after year," says Van Herk.

Wild oat seed can remain dormant in the soil for eight or more years, making the weed particularly difficult to manage.

Testing crop competition

This first year of the demonstration focused on whether crop establishment could improve competition with wild oats. Canola, peas and wheat were planted at different seeding rates and row spacings in areas with higher wild oat pressure.

The goal was to see whether differences in crop density and canopy development could affect wild oat establishment.

Van Herk cautions that the work is a demonstration rather than a replicated research trial, so the observations cannot be statistically analyzed.

The first-year results nonetheless provided some useful observations.

"In the canola and the peas, we saw what we expected — a higher plant stand gives you better weed control because there's more competition," says Van Herk.

One result was less expected. Wider row spacing was associated with lower wild oat numbers in wheat in one area.

Van Herk believes one possible explanation is that the herbicide application was able to reach more of the soil between the rows. With narrower rows, more of the soil surface was protected by the crop canopy when the herbicide was applied, potentially allowing some germinating wild oats to survive.

"We can't prove anything yet, since it's just something we saw in one area. But still, that was an interesting result in the first year," he says.

That observation will be considered alongside the other management practices as the project progresses.

Layering management practices

The project is designed to add management practices each year rather than evaluate each one in isolation.

"We're taking some approaches that are known to work, and then some that we think might work," says Van Herk. In 2027, treatments will include interrow tillage, spring tillage and winter wheat cover crops. The following year, the project will examine fall and spring residual herbicide

applications along with herbicide layering of multiple active ingredients.

The plot layout will also change as treatments are added.

"This year, we had really large plot areas, and then this fall we cut down each plot into thirds," says Van Herk. "So year to year we're getting a little bit smaller because we're stacking effect on effect."

This approach is particularly relevant where herbicide options are limited. Wild oat populations with Group 2 resistance can be difficult to control in peas, while wheat presents the added challenge of managing a grass weed in a grass crop.

"Peas is one of our big issues with wild oats because of Group 2 resistance in wild oats," says Van Herk. "That really limits your herbicides that you can spray on peas to control wild oats."

Silage as a management tool

The project is also testing a practice that has long been proven to reduce wild oat seed production: growing barley for silage.

The demonstration will include three plots managed as barley silage for three consecutive years. The approach allows wild oats to germinate and grow with the barley, but removes the plants before they can mature and return seed to the soil.

"Honestly, one of the most effective strategies that we have seen and is still being used is growing a silage crop," says Van Herk.

> **"The approach allows wild oats to germinate and grow with the barley, but removes the plants before they can mature and return seed to the soil."**

However, he notes that silage is not an option for every grain producer because it requires access to a market and may not fit the farm's operation.

"For dairy farmers or feedlots, it works great," he says. "It's easier to fit into your yearly crop plan."

Field-scale demonstration

Farming Smarter is also conducting a one-year field-scale demonstration with a nearby farmer. It includes 12 treatments combining tillage, cover crops and Avadex herbicide applications.

The larger-scale work will demonstrate several established wild oat management techniques under field conditions and complement the small-plot project.

The organization has been trying to develop a larger wild oat research project, but has not secured funding for a full trial. The current demonstration is intended to generate observations and ideas that can help identify areas for more formal research.

> **"The demos help us gain a little more confidence in what we're doing, and gaining some ideas out of this."**

Van Herk says the work is already providing questions worth pursuing, including the unexpected response seen with wider wheat rows.

"Now we've seen this method might work, so we'll probably look into it a bit more," he says.

He also sees value in demonstrating that wild oats remain a significant issue for growers and that there are management approaches worth investigating.

"We might not be able to come out with a clear-cut answer because this isn't an actual research trial," says Van Herk. "But we can maybe help prove some of these methods that are still working."

For growers, the project is ultimately about moving beyond short-term control and examining how management decisions made over several seasons can influence the weed seed bank.

Rather than relying on a single practice, Farming Smarter is building a series of management layers – from crop competition and tillage to cover crops, herbicides and silage – to determine which combinations show enough promise to warrant further investigation.

"The demos help us gain a little more confidence in what we're doing, and gaining some ideas out of this," says Van Herk. **FS**

A New Policy Is Coming For Agriculture – Make Sure Your Voice Is Heard

As federal, provincial, and territorial ag ministers announce the priorities for the Next Policy Framework, producers across Canada have a narrow window to weigh in before the details are locked.

By Sean Kjos

On July 17, the federal, provincial, and territorial minsters of agriculture (FPTs) across Canada released 'The Halifax Statement' that outlines the priorities and guiding principles behind the vision of the Next Policy Framework (NPF). Set to replace the public support offered through the current Sustainable Canadian Agricultural Partnership (Sustainable CAP) in April 2028, the NPF commits to growing resilience across the sector, diversifying our markets, and advancing science, research, and innovation to drive economic growth and keep Canada's agriculture industry competitive at a global level over its five-year lifespan.

Sustainable CAP provides programs that support agriculture sectors across the country to the tune of $508-million between 2023 and 2028. FPTs held numerous meetings across Canada to speak with stakeholders, including producers, researchers, and agri-businesses, to receive their feedback on the performance of these programs and learn what priorities they're looking for in the Next Policy Framework.

Ken Coles, executive director of Farming Smarter, believes that for the program to truly succeed, it's paramount that it properly supports the industry in overcoming the biggest challenges it faces today.

"We're losing resources, capacity, and extension – we're losing a functioning system," he states. "I'm concerned that our model is failing.

"We've been using an older system that worked when it was funded and supported properly. What we've done is reduce the funding at all levels and haven't changed the system," Coles continues.

Throughout his career in agriculture research, Coles has witnessed the dissolution and fragmentation of multiple primary research models. Governments, provincially and federally, have either slowly reduced their capacity and funding for research and extension services publicly available to farmers or removed them altogether. "The services they've had over the past 30 years aren't there anymore.

"We need to recognize what science does for agriculture and support it in a way that's meaningful and viable over the long term the same way a farm wants to be long term," Coles posits.

If governments are going to cut public research, what's the alternative?

The typical response is to let private industry deal with it, but this comes with its own set of challenges. Primarily, they lack the required oversight, and their priorities are on profit rather than public good.

While the answer seems to lie beyond the scope of a single five-year policy, Coles is confident that the pieces to build strong scientific and innovation systems already exist within the industry.

"In order to function as a wholly working system, each role has to be clearly defined with a good understanding of the capacity, so we can work together without competing."

"If governments are going to cut public research, what's the alternative?"

Supporting public good work is the necessary role government should take, Coles believes. And that support should fall to the numerous not-for-profit organizations across the country already working to fill the gaps left by the previous government services. "We need to look at creative options like not-for-profits to play a bigger role, and there's a right amount of funding that should go towards that," Coles adds.

Coles had the opportunity to attend a conversation on the Next Policy Framework prior to the creation of The Halifax Statement. While he was glad to see the general direction of The Statement, he believes there are still bigger conversations that need to happen and that more people need to be engaged.

"To me, the solution is always people," Coles answers.

However, he understands that it's critical for the administrative process to be simple to be successful. "Farmers aren't going to partake in programs if it's a whole bunch of paperwork," Coles mentions.

Fortunately, the government of Alberta recognizes this priority as well.

> **"Farmers who seek to share their thoughts on what's required to build a strong and resilient agricultural industry across Canada are encouraged to engage with their provincial government, along with the federal government."**

"We will continue advocating for the reduction of federal red tape and for adaptive programs and services that strengthen the competitiveness of the sector while helping mitigate risks from market disruptions, trade uncertainty, and other production risks," Alberta Minister of Agriculture and Irrigation, Tara Sawyer writes in an email.

Farmers who seek to share their thoughts on what's required to build a strong and resilience agricultural industry across Canada are encouraged to engage with their provincial government, along with the federal government.

"In the coming months, Alberta will engage with industry stakeholders to develop the multilateral/bilateral agreements [of the NPF]. Throughout the process, our goal is to ensure the Next Policy Framework has the flexibility to meet the unique needs of Alberta's agriculture and food sectors by incorporating the valuable insight of producers who deserve a seat at the table," Minister Sawyer includes in her response. **FS**



Seeding The Idea Of A New Cropping Paradigm

By Lee Hart

Being out in the field with the air seeder every month of the year may seem like a bizarre concept to many producers, but to Farming Smarter researchers in Lethbridge, it might be time for farmers to at least entertain the notion that there are multiple seeding windows throughout the year.

How can that be and why would I want to do that are excellent questions. But as Farming Smarter carries out its program of research projects such as ultra early seeding, double cropping and cover cropping, the reality is that in testing these newer production practices, researchers are sowing crops 12 months of the year.

"As we were looking at our research projects we realized we started last November with dormant seeding research trials," says Mike Gretzinger, Farming Smarter agronomy research coordinator. "Then we seeded different crops starting in January and that carried on each month right up until September. Now we are going to be seeding some winter cereals this fall and again we will have dormant seeding projects to be seeded in November and perhaps December. We have seeded crops every month of the year."

Gretzinger isn't suggesting it's an idea all producers need immediately embrace. The fact is, not every project works out 100 per cent and there is still much to learn. "But we're hoping producers will start thinking outside the box, or see this as a paradigm shift in thinking," he says. "May is not the only month for seeding, at least in southern Alberta. Producers need to be aware there are other production practices that involve seeding crops at different times of the year."

Dryland farming isn't being left out of the equation, but the fact is that many of the new research trials are most suited to irrigated production systems — those acres have the range of crops and stability of timely moisture. But there may be some practices that can be adapted to dryland acres as well.

Farming Smarter research trials begin the year with ultra early seeding. That's a concept developed by Dr. Brian



Mike Gretzinger and Carlo Van Herk seeding March 27. Credit: Farming Smarter



Soil temperature, not the calendar, drives ultra-early seeding decisions. Credit: Farming Smarter



Mike Gretzinger rides the plot seeder in February as Farming Smarter seeds ultra-early research plots. Credit: Farming Smarter

Beres, agronomy research scientist with Agriculture and Agri-Food Canada in Lethbridge.

Starting with spring wheat, the research showed that under Chinook conditions, if the snow clears off the ground and the top couple inches of soil warms up to at least +2 C, spring wheat can be successfully seeded. Even if it turns cold again, the crop will eventually establish as spring arrives and go on to produce a successful grain crop. Similar research with similar findings is now being done with durum and the plan is to conduct ultra early seeding with other cereals.

"For those trials we are waiting for ideal Chinook conditions so we can be seeding crops in January, February and March," says Gretzinger. "Then as we get into April, May and June we are seeding our regular research trials."

Double cropping research looks at the possibility, even in short-season Alberta, of getting two crops off the same land in the same year. This project involves seeding a winter cereal crop such as hybrid fall rye, winter wheat or winter triticale in August or September one year, and then the following year harvest those crops for silage in July. Then, immediately follow that by re-seeding those acres to other forages such as oats, barley, corn or sorghum. That second round of forages can be grazed or harvested as a second silage crop in September or later.

And cover cropping research is all about keeping the soil protected. As some of the higher value, specialty crops that produce little crop residue are harvested in southern Alberta, it is important to get the ground covered to reduce the risk of wind and water soil erosion.

As specialty crops such as potatoes, sugar beets, dry beans and even seed canola are harvested in September and October, there may be an opportunity to follow behind those and seed something like barley or winter triticale, get it irrigated and growing to provide ground cover over late fall and winter.

"With potatoes, for example, we have even tried broadcast application of cereal seed before the potatoes are harvested," says Gretzinger. "Once they are harvested the cover crop seed is already there to start growing.

"All of these projects are different, but at the same time they also have a common objective of looking at improving production efficiency as well as helping with soil conservation," adds Gretzinger. "It is important to conduct field research to evaluate these practices. It is also important to have occasional failures because then we learn what doesn't work. Or maybe then we can look to see how this practice can be tweaked or adjusted to be more effective.

"Hopefully we can raise awareness among producers about improved production practices that may benefit their cropping operations that may involve field work on a whole different timetable." **FS**

Fall Work, Spring Payoff: Can Strip Tillage and Banding Lighten the Load for Canola Growers?

By Sean Kjos

Fertilizer is one of the biggest cheques a farmer writes each year. But getting a full return on that investment isn't just about how much goes on the field. It's also about when, where and how those nutrients reach the crop.

That's the thinking behind Farming Smarter's Banding Fertility Using Strip Tillage in Canola (FerCanStrip) project. Funded by Results Driven Agriculture Research (RDAR), the four-year study tests whether strip tillage and fertilizer band placement can work together to support canola production.

At its heart is a practical question for growers: can fall strip tillage and fertilizer banding reduce spring workload while maintaining canola yield and limiting nutrient losses?

Buying back time in the spring

"If we can go in and do the strip tillage in the fall, and there's benefits – or at least no negative outcomes – to banding the fertilizer into the ground at the same time, then you can save a lot of valuable time in the spring," says Mike Gretzinger, agronomy research coordinator at Farming Smarter.

In southern Alberta, spring is a race against the clock. Farmers push to get seed in the ground as quickly as possible to make the most of the region's short growing season. Every task that can be moved to the fall is one less thing competing for those precious spring days, and that could be a huge practical advantage.

> **"In southern Alberta, spring is a race against the clock."**

Of course, saving time only matters if the crop and the environment don't pay the price. Gretzinger works with Farming Smarter research scientist Dr. Thierry Fonville to evaluate the data between growing seasons. Beyond crop performance, the pair are tracking the environmental and economic outcomes of pairing strip tillage with fertilizer banding.

"We're making sure these different practices don't cause us to lose a substantial amount of fertilizer to the environment," Gretzinger says.

"We're comparing end-of-season yields and assessing how different fertilizer application methods, timings, and inhibitors affect greenhouse gas emissions and nutrient losses," Fonville adds.

Weather: the wild card

While final results are still several years away, Gretzinger and Fonville note early findings suggest that weather conditions may play a significant role in both fertilizer efficiency and greenhouse gas emissions.

"When a lot of rain falls in a short period of time, the soil can become so wet that, without an inhibitor, you could lose a lot of your fertilizer. The timing of this moisture can affect how much greenhouse gases are released when you lose that fertilizer," Fonville explains.

It's a reminder that even the best plan can be upended by Mother Nature. Still, the team isn't discouraged.

"Sometimes you can do everything right and you don't see a huge impact, so it comes down to doing the best you can every time," Gretzinger says.

Clear answers for the farm

Whatever the data reveals, the team's goal is the same: give farmers a clear answer, along with practical guidance on fertilizer management strategies that fit their operations.

"Our hope is to provide solid guidance on what could work on their farm and what the best placement, timing, and products are for your canola crop," Fonville says.

For growers juggling tight seeding windows and costly inputs, that kind of guidance could be well worth the wait. **FS**

Two Crops, One Season: Can Double Cropping Work in Southern Alberta?

By Sean Kjos

Why settle for one crop in a season when you could harvest two?

That's the promise of double cropping: growing two different crops on the same field within a single year, one right after the other, to get more out of every acre. The practice is common in parts of the world with long growing seasons, but it has yet to catch on across the Canadian Prairies.

The Great White North's harsh winters leave a narrow window to grow anything, let alone two crops back-to-back. But Southern Alberta is an exception. With a relatively warm climate, a longer growing season and access to irrigation, the region has the ingredients to make double cropping work.

Some local producers have already tried it, and according to Mike Gretzinger, agronomy research manager at Farming Smarter, the results have been mixed. That's exactly why nailing down best management practices matters.

Answering the questions cattle feeders are asking

Farming Smarter, with the support of Alberta Beef Producers and Results Driven Agriculture Research, launched a multi-year project in response to growing interest from cattle feeders who want to make the most of their resources while producing high-quality feed for their herds.

The project tackles three key questions:

- Which winter crop performs best?
- When is the best time to harvest that first crop for silage?
- Which forage crop makes the best second act?

The study tests hybrid fall rye, winter wheat, and winter triticale as fall-seeded first crops, with oats, barley, corn, and sorghum as the follow-up forage options.

"We want to get some really good data to back up this practice," says Gretzinger. "We want to know the regional effects on yield and nutritional data, and which combinations of crops are going to give you the best bang for your buck."

Timing is everything

The Double Cropping options for diversified feedlot systems project kicked off with fall seeding of winter crops in 2025. These fall crops were harvested in two timings for the study, late-June and early-July, with the second silage crops being seeded shortly after. One factor is already standing out: silage timing.

Cut winter cereals in the third week of June, and they'll typically be in the "milk stage," a critical growth phase when the kernels fill with a white, milky, nutrient-rich starch.

"Silaging at the milk stage will typically get you the highest quality nutritional value and digestibility," Gretzinger explains. "But if you leave it in the field for another two or three weeks, you're going to get a lot more yield out of it. So, that's where you need to decide what is more important." But waiting comes with a hidden cost.

"The danger in waiting until early July to silage is that you don't know how much growth you're going to get out of your second crop," he says. "You're much more likely to get a good second crop if you were to plant the third week of June as opposed to early July, but finding the optimal balance depends on what factors you're trying to maximize for your feed."

In other words, every extra week the first crop spends in the field is a week the second crop doesn't get.

Following the money

As the project continues, the Farming Smarter team will build an economic analysis of double cropping systems to measure return on investment, yields, and feed quality.

The goal: give producers the numbers they need to decide whether a second crop is worth it. **FS**

From Internship To Opportunity: Finding A Career Path at Farming Smarter

Dakota Hanson entered her Farming Smarter internship unsure where her career would lead. Four months later, she had gained confidence, taken on new responsibilities and helped shape a role that turned a summer opportunity into a career.

By Dakota Hanson

"What's next?" This question haunted me as I prepared for my last semester at university.

I only had a handful of classes left before I graduated with a Bachelor of Management, and the world of marketing was at my fingertips. Yet, I kept returning to that question without an answer. Fortunately, the silver lining of not having a concrete idea of what you want to do with your life leaves you open to whatever opportunities come your way.

One night, I came across a posting for a Communications Intern at Farming Smarter. I was immediately thrown into debate with myself – it seemed like a fun way to kickstart my career, but I wasn't confident they would hire me. I had the skills for the job, but I had no background in agriculture. Despite my doubts, I applied.

Within days, I received a response from Jamie asking for an interview, which I quickly accepted. A few weeks later, I received and accepted an offer for the position.

Entering a new workplace is always intimidating and nerve-wracking to me, but Farming Smarter felt different from day one. There was an immediate sense of welcoming and friendliness that I later realized is a core part of Farming Smarter.

During my orientation, I learned Farming Smarter was looking to build a new shop within a year, which was exciting for the team. However, I assumed the project would have little connection to my work as an intern. An assumption that I quickly learned was wrong.

About two weeks after I started, Ken asked me to meet with him. Expecting a routine check-in, I was surprised when he said, "You're going to help me fundraise for the new Home Quarter." Ken and I began meeting regularly to discuss fundraising efforts; he gave me strategies and I used my strong organizational skills to create a path forward with the entire team.

Through these conversations, I learned to stop underestimating myself and gained confidence. And that confidence led me to ask for a new contract that continued after the summer.

At the end of my 30-day evaluation with Jamie and Ken, Jamie asked if there was anything else I would like to discuss. I had come into the conversation with the sole goal of finding out the chances of me staying at Farming Smarter past August, so I asked them. After what felt like a lengthy silence but was only a few seconds, Ken asked, "why do you want to stay?"

I had been so engaged with the opportunity to help fundraise for our new Home Quarter project that I would be upset if I didn't get to be a part of it and sit in the building I helped raise money for.

Ken left me in silence again before responding, "that makes sense and we can probably work something out."

At the end of my 60-day evaluation, Jamie and Ken asked me to come up with my dream job description. He explained that Farming Smarter likes to create the job around the person, to ensure their skills and strengths are leveraged correctly, and you have the opportunity to grow in-line with your aspirations.

As soon as I got back to my desk, I immediately began drafting my dream job description and the goals I wanted to achieve with the position.

Two weeks later, they had a contract lined up for me, ready to sign.

Today, I am the Market Engagement & Partnership Lead at Farming Smarter – which is an amazing launch to my career and a position I'm proud to have that I carved out for myself during my internship. While I still don't know "what's next," I am excited to explore what else I'm capable of and how I will continue to grow at Farming Smarter. **FS**

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MERCER SEEDS

“One of our least stressful springs in a long time.”

Terry and Christine Bice farm at Eaglesham, Alberta. Ahead of the 2026 season they stopped buying nitrogen and started making their own. We asked them how the first year went.

> ***“It was literally just ‘water’ that we were applying.”***
>
> CHRISTINE BICE



Wheat on the Bice farm, first season on Green Lightning.





What made you start looking at something different?

Christine: With the price of synthetic fertilizer, it was getting harder to maintain an adequate fertility program and still have it be feasible. We also believed the synthetic fertilizer was slowly harming our soil biome while we tried to grow a large crop.

What did it actually take to get set up?

There were many pieces to the puzzle. Because the idea was so new, we had to sell the system to our financial advisers — not just the idea of making our own fertilizer, but the timing of it all. Proper water treatment, adequate storage tanks, a separate power source for the size of system we put in, and converting our drill to apply liquid. Budget for the system, then budget again — for every dollar of equipment, plan on roughly another sixty cents of infrastructure.

How did seeding go?

Once our drill was fully set up and running with the liquid kit and tank, it became one of the least stressful springs we’ve had in a long time. Because we were no longer using granular 46-0-0 as our nitrogen source, we could seed an extra 80 acres on one fill. And we didn’t have the wear and tear that goes with putting that much granular down.

Terry, your dad has farmed his whole life. What did he notice first?

Terry: He said the first positive thing he noticed about making the switch was the longevity we gained on our augers, truck trailers, everything, by not using granular N. It was easy to work with.

What has the first season shown you?

Christine: Our crop input bill has been reduced by 50%, and our nitrogen bill is gone completely. We did add some costs — electricity, parts to maintain the system — but minimal in comparison. We haven’t completed harvest yet, but our crops have shown no signs of poor fertility. Our canola bloom period was extended and there are very few blanks on the stems. What surprised us most was how visibly responsive the wheat was to each application — you could see it become more green each time.

What would you tell someone thinking about this?

It all comes down to time. Give yourself enough time to complete each step without it affecting the days required to produce the actual product. And you need a certain level of belief that it’s going to work, because it’s that new — they don’t have all the answers to the questions you’re going to have.

What are realistic expectations?

You have to be okay with the level of risk that comes with the unknowns. Until we’ve used the product a few years, it’s hard to say how much of what we’re seeing is from Green Lightning alone — residual fertilizer may be playing a role in year one. But going forward, absolutely it has a place here. With the cost savings, ease of use and the longevity on equipment, we can maintain our yields and still gain financially.

Results and figures are Terry and Christine Bice’s own, from their first season with Green Lightning, as of harvest 2026.

Scan to learn more